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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,788	02/23/2004	Tatsuro Kawakami	00862.023469	5515

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EXAMINER	
PATEL, SHAMBHAVI K	

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,788	KAWAKAMI, TATSURO	
	Examiner	Art Unit	
	Shambhavi Patel	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 11-13* is/are rejected.

7)☒ Claim(s) *8-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/06/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-13 are pending.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "System for Simulating the Conveyance of a Flexible Medium'.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 02/23/04 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner has considered the IDS as to the merits.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. **Claims 1-6 are rejected under 35 U.S.C. 101** because the claimed invention is directed to non-statutory subject matter. The Examiner asserts that the current state of the claim language is such that a reasonable interpretation of the claims would not result in any useful, concrete or tangible product. *A*

spring coefficient is determined for the model, but this does not result in a tangible output. Furthermore, claim 5 is not statutory, because it is directed to software, per se. It is lacking storage on a medium which would enable any underlying functionality to occur.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. **Claim(s) 1-7 and 11-13 are rejected under 35 U.S.C. 103(a)** as being unpatentable over **Hashima et al. (US Patent No. 6,950,787) in view of Jones ('Effect of Hammer Length and Nonlinear Paper-ribbon Characteristics on Impact Printing').**

Regarding claims 1 and 3:

Hashima is directed to a design support system which supports a user to design a convey path constituted by mechanical components by simulating a behavior of a flexible medium conveyed in the convey path, comprising:

a. a flexible medium model creating apparatus which creates a flexible medium model expressing a flexible medium, which is conveyed in a convey path as a design target in which an arrangement of mechanical components of the convey path is defined in advance, by using a plurality of stiff body elements each having a mass **(figures 25A, 25B, 25C: flexible medium 100 stiff body elements 301, 302)**

b. an input apparatus which inputs information indicating which one of obverse and reverse surfaces of the flexible medium has a coated layer or toner layer formed thereon. A skilled artisan would obviously include this functionality in the system because it is well known in the art that printers can print on both sides of the paper, and so this functionality is obviously required in order to accurately simulate the printing process

Hashima does not explicitly disclose the modeling of the rotational and translational springs of the stiff body elements and the calculation of the spring coefficient of the rotational spring. Jones teaches the modeling of printers by accounting for the functional mechanisms that

would be possible during the printing process **(Jones: Introduction)**, such as translation and rotation **(Jones: 'Analytical Model of the Print Mechanism')** and spring constants **(Jones: 'Typeslug Model').** At the time of the invention, a skilled artisan would have combined the teachings of Hashima and Jones because by taking into consideration the mechanical functionality of the printer and the behavior of the rollers, Jones provides a more accurate simulation **(Jones: 'Conclusion')**.

Regarding claims 2 and 4:

A skilled artisan would have knowingly included this function because when the paper is bent towards the valley side, it is angled closer to the roller and thus the spring constant must be smaller.

Regarding claims 5 and 6:

Hashima is directed to a program and a storage medium storing the program for causing a computer to realize a design support method defined in claim 3 **(column 4 lines 1-38)**.

Regarding claims 7 and 11:

Hashima is design support system which supports a user to design a convey path constituted by mechanical components by simulating a behavior of a flexible medium conveyed in the convey path, comprising:

a. a flexible medium model creating apparatus which creates a flexible medium model expressing a flexible medium, which is conveyed in a

convey path as a design target in which an arrangement of mechanical components of the convey path is defined in advance, by using a plurality of stiff body elements each having a mass **(figures 25A, 25B, 25C: flexible medium 100 stiff body elements 301, 302)**

b. an input apparatus which inputs a convey condition in the convey path and frictional coefficients between the mechanical components arranged in the convey path and the flexible medium **(column 5 lines 44-53; column 6 lines 1-11; column 12 lines 13-24)**

c. a motion calculation apparatus which time-serially calculates a behavioral state of the flexible medium in the convey path by numerical simulation on the basis of the flexible medium model and the input convey condition and frictional coefficients **(figure 6; column 19 lines 44-62)**

d. a result display apparatus which displays the behavioral state of the flexible medium which is calculated by said motion calculation means **(column 5 lines 16-21)**, wherein if a bending moment of each of the stiff body elements which is calculated by said motion calculation apparatus by numerical simulation is analyzed **(figures 12-14)**, and it is determined that a rotation moment larger than a predetermined value has locally occurred in the flexible medium **(column 19 lines 1-34)**, said flexible medium model creating apparatus increases a segmentation count that has been set in segmenting the flexible medium into a plurality of stiff body elements **(column 20 lines 56-67)**. The prior art discloses the simulation of travel of

the flexible medium induced with the shifting load center *(analogous to segmenting the stiff body elements)*. The simulator first calculates the time at which the flexible medium comes into contact with the roller, and when the position of the load center changes *(analogous to resegmentation)*, the travel information is input by entering the amount f rotation of the rollers.

Hashima does not explicitly disclose the modeling of the rotational and translational springs of the stiff body elements and the calculation of the spring coefficient of the rotational spring. Jones teaches the modeling of printers by accounting for the functional mechanisms that would be possible during the printing process **(Jones: Introduction)**, such as translation and rotation **(Jones: 'Analytical Model of the Print Mechanism')** and spring constants **(Jones: 'Typeslug Model').** At the time of the invention, a skilled artisan would have combined the teachings of Hashima and Jones because by taking into consideration the mechanical functionality of the printer and the behavior of the rollers, Jones provides a more accurate simulation **(Jones: 'Conclusion')**.

Regarding claims 12 and 13:

Hashima is directed to a program and a storage medium storing the program for causing a computer to realize a design support method defined in claim 11 **(column 4 lines 1-38)**.

Allowable Subject Matter

3. **Claims 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable** if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following are reasons for allowance for claims 8-10:

Regarding claim 8:

The prior art does not disclose segmenting the flexible medium into a plurality of stiff body elements arranged at equal intervals between the two points.

Regarding claim 9:

The prior art does not disclose segmenting the flexible medium into a plurality of stiff body elements arranged at an equal ratio between the two points.

Regarding claim 10:

The prior art of record does not disclose prestoring the segmentation of a flexible medium to be conveyed through the convey path into a plurality of stiff boy elements in a database in correspondence with each type of problem contents to be selected by a user with respect to the flexible medium, and said flexible medium model creating apparatus obtains information about a segmentation form corresponding to the type of problem contents selected by the user from the database, and segments the flexible medium into the plurality of stiff body elements on the basis of the information

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is (571) 272-5877. The examiner can normally be reached on Monday-Friday, 8:00 am – 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKP

KAMINI SHAH
SUPERVISORY PATENT EXAMINER